IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	KIESEL et al.	Confirmation No.:	9503
Serial No.:	10/646,402	Examiner:	CABRERA, Zoila E
Filed:	August 22, 2003	Group Art Unit:	2125
For:	ELECTRONIC FINGER PRINTS FOR MACHINE CONTROL AND PRODUCTION MACHINES		

APPEAL BRIEF

Via EFS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants hereby appeal the final rejection of the claims presently pending in the above-referenced application and set forth below their bases for this appeal. Each of the topics required by Rule 41.37 is presented herewith and is labeled appropriately. The Notice of Appeal was filed on February 22, 2008. Applicants have petitioned herewith and authorized payment of the appropriate fee for a two (2) month extension of time extending the date to file an Appeal Brief Action from April 22, 2008 up to and including June 22, 2008.

Applicants hereby authorize the Commissioner to charge Deposit Account No. **50-3732**, Order No. **03869.105025** the appeal brief fee of $510.00, as well as any other fee that may be associated with the filing of this paper.

(1)   REAL PARTY IN INTEREST

The real party in interest in the above-referenced application is Siemens

Aktiengesellschaft, having a business office at Wittelsbacherplatz 2, 80333 Munich, Germany.

(2)   RELATED APPEALS AND INTERFERENCES

Appellants are not aware of any appeals or interferences related to the above-identified

patent application.

(3)   STATUS OF CLAIMS

Claims 1-25 are currently pending in this application. Claims 1, 17 and 25 are the

independent claims. Appendix A attached hereto provides a complete listing of all of the

pending claims of the above-referenced application.

This is an appeal from a final Office Action dated August 22, 2007, which rejected

claims 1-25 of this application.

The Final Office Action erroneously included the statement that the "[c]laims are rejected

under 35 U.S.C. §102(b) as being anticipated by Haseley et al. (US 5,602,757)." (Final Office

Action, 2). The Examiner has acknowledges that the §102(b) rejections "were inadvertently left

in the office action" and therefore, was not intended as a rejection of the currently pending

claims in the Final Office Action. (Advisory Action, 2).

Claims 1-25 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent 5,602,757 to Haseley et al. (hereinafter "Haseley") in view of U.S. Patent No. 6,330,525 to Hays et al. (hereinafter "Hays").

Applicants filed a Notice of Appeal on February 22, 2008 with the corresponding fee.

(4)   STATUS OF AMENDMENTS

Appellants filed an amendment to the claims on May 29, 2007, which was entered and considered by the Examiner in the Final Office Action mailed on August 22, 2007.   No additional amendments have been filed subsequent to the Final Office Action.

(5)   SUMMARY OF CLAIMED SUBJECT MATTER

The claimed invention will be described with reference to a specific embodiment. This is merely meant to be a summary and is in no way intended to limit the pending claims.

FIG. 1
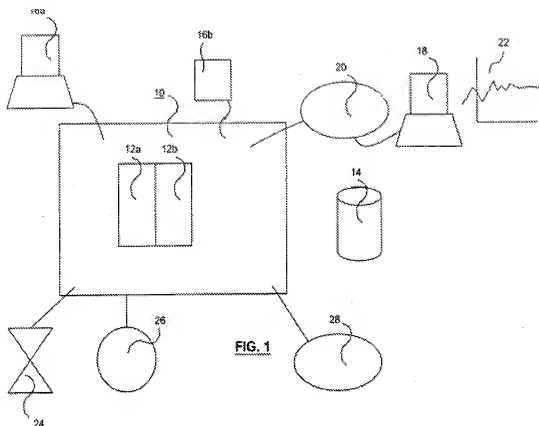
An exemplary embodiment of the present invention, as shown in Figure 1 reproduced above, provides an apparatus for determining electronic fingerprints of a machine according to an aspect of the present invention having an automation component 10, which may be part of a machine tool or other production machine. (*See* Specification, page 6, ¶[0019]). The automation component 10 may include a controller 12b for controlling the motion of mechanical parts of the production machine and associated work pieces. (*See id.* at page 6, ¶[0019]). The automation component is capable of capturing electronic fingerprints of a machine which is associated with a unique condition or state of that particular machine. (*See id.* at page 5, ¶¶ [0017]-[0018], page 6, ¶[0020] and page 10, ¶[0029]). The apparatus may comprise a fingerprint device for selecting for measurement a plurality of movements of the machine to generate an electronic fingerprint that is representative of a condition of the machine. (*See id.* at page 2, ¶[0005]). The

fingerprinting functionality may be capable of knowing which measurements to make in order to reveal the electronic fingerprint. (*See id.* at page 7, ¶[0019] to page 8 ¶[0020]). For example, machine tools having a cutting function may be measured by a test trace function whereas other types of machines, such as a pump, may not have trace capability. (*See id.* at page 7, ¶[0019]).

Another aspect of the present invention provides a method for generating electronic fingerprints of a machine. The method may include steps for selecting for measurement parameters associated with at least one component of the machine that are representative of a condition of the machine, reading the parameters and storing the read parameters, thereby creating an electronic fingerprint representative of a condition of the machine. (*See id.* at page 2, ¶[0006]). The parameter measured may be selected from a plurality of movements of the machine to generate an electronic fingerprint that is representative of a condition of the machine. (*See id.* at page 2, ¶[0005]). The fingerprinting functionality may be capable of knowing which measurements to make in order to reveal the electronic fingerprint. (*See id.* at page 7, ¶[0023] to page 8, ¶[0024]).

In another exemplary embodiment, the present invention provides a computer readable program product having a computer processor of an automation component comprising a controller for controlling movements of at least one component of a machine. (*See id.* at page 7, ¶¶ [0022] and page 8, ¶¶ [0024]-[0025]). The instruction may include steps for selecting for measurement parameters associated with at least one component of the machine that are representative of a condition of the machine, reading the parameters and storing the read parameters, thereby creating an electronic fingerprint representative of a condition of the machine. (*See id.* at page 2, ¶[0006]). The parameter measured may be selected from a plurality of movements of the machine to generate an electronic fingerprint that is representative of a

condition of the machine. (*See id.* at page 2, ¶[0005]). The fingerprinting functionality may be capable of knowing which measurements to make in order to reveal the electronic fingerprint. (*See id.* at page 7, ¶[0023] to page 8, ¶[0024]).

(6)   GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The issues to be decided on appeal is whether Claims 1-25 are patentable under 35 U.S.C. §103(a) over Haseley in view of Hays.

(7)   GROUPING OF CLAIMS

Appellants' claims will be argued in one grouping, Claims 1-25 (Group I).

(8)   ARGUMENT

A.   SUMMARY

The present appeal arises out of the PTO's rejection of the pending claims, erroneously in Appellants' view, based upon art that (1) whether taken individually or collectively, fails to disclose or suggest the present invention as claimed, and (2) cannot properly be combined.

The primary reference, Haseley, fails to even hint at a number of the necessary elements of the claimed invention. The PTO has admitted that Haseley neither discloses nor suggests:

- at least one type of movement from a plurality of different types of movements;

- determining which measurements of the machine will result in capturing electronic fingerprints representative of a state of the machine; and

- the fingerprint device selects the at least one type of movement of the machine for measurement based on its determination of which plurality of movements, when measured, will reveal the electronic fingerprint that is representative of the condition of the machine.

Haseley, in fact, fails altogether to recognize the electronic fingerprints and the automation component of the claimed invention.

Although the PTO has acknowledged that Haseley fails to disclose a number of critical features of the claimed invention, it erroneously assumed that the appreciation of a need for these features were in the prior art. Based on this assumption, the PTO invoked Hays to furnish disclosure it admitted Haseley failed to disclose. As described at length, above, there was no such recognition in the art prior to the present invention and Hays cannot properly be looked to or combined with Haseley.

There is no express or implied motivation to combine Haseley with Hays. Rather, Haseley teaches away from the Appellants' invention. Haseley presents a stand-alone monitoring system for use with a given piece of machinery that is a complete solution, on its own, for monitoring the vibration signature of a machine. Furthermore, Haseley fails recognize that the electronic fingerprint for each machine is unique to that particular machine and in direct contrast to the present invention, compares live vibration data from a particular machine to saved vibration signatures of another machine in order to extrapolate the state of that particular machine.

B. STATEMENT OF APPLICABLE LAW

35 U.S.C. 103(a) provides that:

> A patent may not be obtained though the invention
> is not identically disclosed or described as set forth
> in section 102 of this title, if the differences
> between the subject matter sought to be patented
> and the prior art are such that the subject matter as a
> whole would have been obvious at the time the
> invention was made to a person having ordinary
> skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner
> in which the invention was made.

A rejection under 35 U.S.C. §103(a) requires the establishment of a *prima facie* case that the claimed subject matter, including all claim elements, would have been obvious to a person having ordinary skill in the art on the basis of either a single prior art reference or more than one reference properly combined. The U.S. Patent and Trademark Office has the burden under 35 U.S.C. § 103 to establish a *prima facie* case of obviousness. *In re Warner et al.*, 379 F.2d 1011, 154 U.S.P.Q. 173, 177 (C.C.P.A. 1967), *In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598-99 (Fed. Cir. 1988).

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicants' disclosure. *In re Vaeck,* 947 F.2d 488 (Fed. Cir. 1991).

To determine the level of ordinary skill in the art, a court would consider factors such as the educational levels of those in the relevant industry and the sophistication of the technology

involved. *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991). The actual skill level of the inventor is not determinative. *Standard Oil*, 774 F.2d at 454.

The scope of pertinent prior art is defined as (1) that which is from the same field of endeavor, regardless of the problem addressed or, (2) if not within the same field of endeavor, that which is reasonably pertinent to the particular problem to be solved. *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 F.2d 613, 620 (Fed. Cir. 1985); *In re Nilssen*, 851 F.2d 1401, 1403 (Fed. Cir. 1988) (the hypothetical person of ordinary skill in the art is presumed to be aware of "all prior art in the field of the inventor's endeavor and of prior art solutions for a common problem even if outside that field").

The U.S. Supreme Court recently clarified the law relating to obviousness. *KSR Int'l. Co. v. Teleflex Inc.*, 127 S.Ct. 1727 (2007). Under the Supreme Court's KSR decision, a patent claim is obvious and invalid when "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *Id.* at 1734 (2007)(quoting 35 U.S.C. § 103(a)). KSR maintained the Supreme Court's earlier standard on obviousness requiring that, the fact finder must consider the four factors set forth in *Graham v. John Deere Co.*, 383 U.S. 1 (1966):

(1) the scope and content of the prior art;

(2) the differences between the prior art devices and the claimed invention;

(3) the level of ordinary skill in the art; and

(4) objective considerations, such as commercial success, long felt but unsolved needs, unexpected results, commercial success, adoption by the industry, copying, and failure of others.

Graham, 383 U.S. at 17-18; *see also KSR*, 127 S.Ct. at 1734. "While the sequence of these

questions might be reordered in any particular case, the factors continue to define the inquiry that

controls." *Id.* "If a court, or patent examiner, conducts this analysis and concludes the claimed

subject matter was obvious, the claim is invalid under § 103." *Id.*

Until recently, the Federal Circuit had employed an additional test for determining the

obviousness of combining prior art references. Under the Federal Circuit's "teaching,

suggestion, or motivation" test ("TSM" test), a patent claim could only be proved obvious if

some motivation or suggestion to combine the prior art teachings can be found in the prior art,

the nature of the problem, or the knowledge of a person having ordinary skill in the art. *Id.*

(*citing Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 1323-1324 (Fed. Cir. 1999)).

The TSM test as applied by the Federal Circuit was addressed by the Supreme Court in

KSR, which stated that there is "no necessary inconsistency between the idea underlying the

TSM test and the *Graham* analysis," but the court nevertheless cautioned that the obviousness

analysis "need not become rigid and [use] mandatory formulas; and when it is so applied, the

TSM test is incompatible with [Supreme Court] precedents." *KSR*, 127 S.Ct. at 1741.

The Supreme Court's decision in *KSR* does not completely reject the TSM test or replace

it with another test. In offering guidance, the Court reaffirmed that "the TSM test captures a

helpful insight: a patent composed of several elements is not proved obvious merely by

demonstrating that each of its elements was, independently, known in the prior art." *Id.* at 1731.

For this reason, the Court instructed the lower courts not to apply the principles of the TSM test

mechanically, but rather to use a common-sense, flexible approach. *Id.* "A court must ask

whether the improvement is more than the predictable use of prior art elements according to their

established functions." *Id.* This is because the "combination of familiar elements according to

known methods is likely to be obvious when it does no more than yield predictable results." *Id.*

Additionally, "[t]o determine whether there was an apparent reason to combine the known

elements in the way a patent claims, it will often be necessary to look to interrelated teachings of

multiple patents; to the effects of demands known to the design community or present in the

marketplace; and to the background knowledge possessed by a person having ordinary skill in

the art." *Id.* To "facilitate review this analysis should be made explicit." *Id.* "But, it need not

seek out precise teachings directed to the challenged claim's specific subject matter, for a court

can consider the inferences and creative steps a person of ordinary skill in the art would

employ." *Id.*

While the "teaching, suggestion, motivation test" should not be applied rigidly, it

nonetheless provides insight into the obviousness inquiry. *KSR Int'l v. Teleflex Inc.,* 82

U.S.P.Q.2d 1385, 1391, 1396 (2007). The prior art must provide one of ordinary skill in the art

with the motivation to make the proposed modification needed to arrive at the claimed invention.

In re Geiger, 815 F.2d 686, 2 U.S.P.Q.2d 1276 (Fed. Cir. 1987); *In re Lalu and Foulletier*, 747

F.2d 703, 705, 223 U.S.P.Q. 1257, 1258 (Fed. Cir. 1984). Claims for an invention are not *prima*

facie obvious if the primary references do not suggest all elements of the claimed invention and

the prior art does not suggest the modifications that would bring the primary references into

conformity with the application claims. *In re Fritch*, 23 U.S.P.Q.2d, 1780 (Fed. Cir. 1992). *In*

re Laskowski, 871 F.2d 115 (Fed. Cir. 1989). This is not possible when the claimed invention

achieves more than what any or all of the prior art references allegedly suggest, expressly or by

reasonable implication.

   C.   **THE APPLIED REFERENCES FAIL TO DISCLOSE ALL ELEMENTS
          OF THE CLAIMED INVENTION**

The PTO has rejected the pending claims as obvious under 35 U.S.C. §103(a), alleging

that all of the elements of all of the pending claims are disclosed by a combination of Hasley and

Hays. However, each of the claims includes elements that are not taught by any of the two cited

references, whether alone or in combination.

> **1.   Haseley does not disclose selecting at least one type of movement of
> the machine for measurement based on a determination of which
> plurality of different types of movements, when measured, will reveal
> the electronic fingerprint that is representative of the condition of the
> machine**

The primary reference relied upon by to support the rejections is Haseley. Haseley

apparently relates a frequency vibration monitoring system having a plurality of sensors installed

on the device to be monitored in known, predetermined locations. As described, these sensors

purportedly convert the mechanical vibration of a machine element into a corresponding

electrical signal that is sent to a monitoring system for processing.

The PTO has repeatedly acknowledged that Haseley "fails to disclose some limitations of

claims 1, 17, and 25 and the limitations of claims 14 and 23." (Final Office Action, 6; *see* Office

Action of 1/29/2007, 6). In particular, the PTO recognizes that Haseley fails to disclose

- at least one type of movement from a plurality of different types of movements;

- determining which measurements of the machine will result in capturing
  electronic fingerprints representative of a state of the machine; and

- the fingerprint device selects the at least one type of movement of the machine for
  measurement based on its determination of which plurality of movements, when
  measured, will reveal the electronic fingerprint that is representative of the
  condition of the machine.

which are elements, in one form or another, of all of the pending claims. (*See* Final Office Action, pages 6-7).

Haseley, in fact, fails altogether to recognize the automation component of the claimed invention. Indeed, Haseley relates to a stand-alone monitoring system for use with a given piece of machinery and teaches away from an automation component that performs the functionality for capturing electronic fingerprints, or for determining which measurements of the machine will result in capturing electronic fingerprints representative of a state of the machine. As discussed below, this primary reference therefore cannot be said to provide a motivation to look to any of the secondary references for guidance in arriving at that aspect of the invention.

Although the foregoing shortcomings are sufficient to overcome all of the PTO's rejections, the cited art also fails to disclose other claim elements as well. Notably, the Examiner contends that the vibration signatures generated from the vibration data are the same as the electronic fingerprints recited by Appellants' claims. Appellants respectfully disagree. The "electronic fingerprints" as recited by Appellants' claims refer to a "set of behavior characteristics that uniquely identify a particular machine." (*Id.*, at page 4, ¶[0016]). According to Haseley, "[t]he machine status input 44 provides for an interface which permits the microcontroller 20 to correlate the state of the machine to be monitored with collected predetermined vibration signatures from a machine which is not equipped with a microprocessor based controller." (Haseley, col. 5, lines 4-9). The cited passage relied on by the Examiner at most, compares live vibration data of a particular machine to saved vibration signatures from another machine in order to extrapolate the state of the machine, which is by no means the representative of the <u>actual</u> state of that <u>particular</u> machine at the time the vibration data are collected. The cited passage is in direct contrast to the Appellants' invention which provides that

"[n]o matter how similar two machines may appear, an aspect of the present invention recognizes that they will always have some unique behavior that can be isolated and documented to identify a condition of the particular machine." (Specification page 4, ¶[0016]).

2.   Hays cannot be properly combined with Haseley, and does not disclose the subject matter admittedly missing from Haseley

As discussed above, Haseley teaches away from the Appellants' invention. Hasley presents a stand-alone monitoring system for use with a given piece of machinery that is a complete solution, on its own, for monitoring the vibration signature of a machine.

Far from supplying the disclosure admitted to be missing from Haseley, Hays (even if it could be properly combined with Haseley, which it cannot) does not provide any disclosure, much less an enabling disclosure for selecting for measurement at least one type of movement of the machine from a plurality of different types of movements of the machine. Hays does not, and indeed cannot, disclose the selecting of movements for measurement from a plurality of different types of machine movement because Hays apparently relates only to a single type of movement, *e.g.*, rotational movement of a pump. Therefore, one skilled in the art could not possibly arrive at the present invention, as claimed, by combining the disclosures of Haseley and Hays. Nonetheless, in the final Office Action,

> Examiner disagrees because Hays discloses that four **secondary curves** or condition signatures which permit confirmation of expected degraded pump components are included in the diagnosis method (Col. 22, lines 37-51), i.e., pressure sensor spectra, velocity and acceleration vibration spectra, bearing forces vs. pump flow rate curve, break hose power vs. pump flow rate curve. (Final Office Action, 9) (emphasis added).

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Hays defines the term "secondary curves" as to include "the relationships between the dependent pump performance variables, net positive suction head, brake horsepower, pump efficiency, thrust bearing force, radial bearing force, motor torque, pump specific speed, dynamic pressure, net positive suction available, etc. all plotted vs flow, the independent variable." (Hays, col. 8, lines 51-59). As is defined in Hays, the relationships illustrated by the secondary curves merely reflect operating conditions of a pump and do not teach or suggest a plurality of different types of movements of a machine, which are different types of motions of the mechanical parts of the machine. The only type of movement, or motion of mechanical parts, reflected by the variables of the secondary curves, as identified in Hays, is rotational motion. Nowhere does Hays describe a plurality of different types of motions of mechanical parts of a machine. Thus, Hays cannot possibly teach or suggest selecting for measurement at least one type of movement of the machine from a plurality of different types of movements of the machine.

D.   THE PTO HAS NOT MET ITS BURDEN OF ESTABLISHING A *PRIMA FACIE* CASE OF OBVIOUSNESS

The PTO has failed to meet its burden of establishing a prima facie case of obviousness for each of the following reasons.

- The PTO has not demonstrated that the cited prior art references teach or suggest all the claim limitation of any claim, since each of the pending claims contain claim limitations that are not taught or suggested by the cited references.

- The PTO has not demonstrated a suggestion or motivation to combine the cited references, since neither the references themselves nor the knowledge generally available to one of ordinary skill in the art provides an incentive to modify the references or to combine the references' teachings.

"In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification,." *In re Linter*, 458 F.2d 1013, 1016 (CCPA 1972). Here, the teachings of the cited references would not have been sufficient to enable one of ordinary skill in the art to apply the necessary substitutions, combinations, and modifications to the references so as to make the claimed invention.

As explained above, the primary reference, Haseley, fails to even hint at a number of elements of the claimed invention. Haseley does not disclose at least one type of movement from a plurality of different types of movements. Haseley does not disclose determining which measurements of the machine will result in capturing electronic fingerprints representative of a state of the machine. Haseley does not disclose an automation component comprising a fingerprint device that selects the at least one type of movement of the machine for measurement based on its determination of which plurality of movements, when measured, will reveal the electronic fingerprint that is representative of the condition of the machine. All of these are necessary elements to the claimed invention. As described at length, above, Hays cannot be properly combined with Haseley and does not disclose the subject matter missing from Haseley.

The PTO has acknowledged that Haseley fails to disclose these critical features of the claimed invention. It then assumed, erroneously, that the appreciation of a need for these features were in the prior art. Based on this assumption, the PTO invoked Hays to furnish disclosure it admitted Haseley failed to disclose. As described at length, above, there was no such recognition in the art prior to the present invention and Hays cannot properly be looked to or combined with Haseley.

The PTO has also failed to demonstrate a suggestion or a motivation to combine the cited references. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestions, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000)("The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art"). It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983). Here, there is no express or implied motivation to combine Haseley with Hays. Rather, Haseley teaches away from the Appellants' invention.

Accordingly, for at least these reasons, the PTO has failed to establish a *prima facie* case of obviousness.

Appellants' claims will be argued in one grouping, Claims 1-25.

The PTO's rejection of the pending claims fall into one group. Group I consists of Claims 1-25, which were rejected as allegedly being unpatentable over Haseley in view of Hays. To establish a *prima facie* case of obviousness for a claim in Group I, all of the claim elements for that claim must be taught or suggested by Haseley or Hays. *See In re Royka*, 490 F.2d 981 (CCPA 1974).

As described in overview above, and with respect to the individual claims below, the PTO has failed to make out a *prima facie* case of obviousness with respect to any of the claims

of Group I, since the prior art references do not teach all of the elements for any of the claims.

Accordingly, for this reason, the PTO has failed to establish a *prima facie* case of obviousness.

E.   GROUP I -- CLAIMS 1-25

The Group I claims consist of Claims 1-25. The PTO has rejected the Group I claims as

allegedly being unpatentable over Haseley in view of Hays. However, for the reasons set forth

above, and as further explained below, the PTO has failed to make out a *prima facie* case of

obviousness with respect to any of the claims in Group I. Accordingly, the rejection of Group I

claims is in error and should be reversed.

As discussed at length above, the arguments incorporated herein by reference, the

combination of Haseley and Hays is inappropriate. Even assuming the combination was proper,

which it is not, the combination would not disclose all of the claim elements of Claim 1. Claim 1

includes the following claim element:

> … the automation component further comprising a
> fingerprint device for **selecting for measurement**
> **at least one type of movement of the machine**
> **from a plurality of different types of movements**
> **of the machine to generate an electronic**
> **fingerprint that is representative of a condition**
> **of the machine**….

At least the claim elements shown in bold are neither taught nor suggested by either by Haseley

or by Hays, whether alone or in combination.

The PTO has admitted that Haseley neither discloses nor suggests:

- at least one type of movement from a plurality of different types of movements;

- determining which measurements of the machine will result in capturing

  electronic fingerprints representative of a state of the machine; and

- the fingerprint device selects the at least one type of movement of the machine for measurement based on its determination of which plurality of movements, when measured, will reveal the electronic fingerprint that is representative of the condition of the machine.

All of these are necessary elements to the claimed invention. Hays, for various reasons set out above, is not available to supply that missing disclosure and cannot supply even the suggestion, much less an enabling disclosure.

Also, as explained at length above, Haseley teaches away from Appellants' invention. Haseley presents a stand-alone monitoring system for use with a given piece of machinery that is a complete solution, on its own, for monitoring the vibration signature of a machine. Furthermore, Haseley fails recognize that the electronic fingerprint for each machine is unique to that particular machine and in direct contrast to the present invention, compares live vibration data from a particular machine to saved vibration signatures of another machine in order to extrapolate the state of that particular machine.

For the purposes of this appeal, Claims 17 and 25 stand or fall together with Claim 1. Accordingly, for at least the reasons set forth above, the PTO has failed to establish a *prima facie* case that claims 1, 17 and 25, as well as those claimed that depend therefrom (Claims 2-16 and 18-24) are obvious.

(9)   CONCLUSION

Applicants respectfully submit that, for the reasons given above, Claims 1-25 were

improperly rejected as obvious and are allowable over the cited art. The PTO has erred.

Applicants accordingly request reversal of the rejection.

                                    Respectfully submitted,
                                    King & Spalding, LLP

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APPENDIX A
APPENDIX OF CLAIMS

1. (previously presented)   An electronic fingerprint apparatus for a machine, comprising:

an automation component comprising: a controller for controlling movements of at least one component of the machine, the automation component adapted for capturing electronic fingerprints representative of a state of the machine and for determining which measurements of the machine will result in capturing electronic fingerprints representative of a state of the machine;

the automation component further comprising a fingerprint device for selecting for measurement at least one type of movement of the machine from a plurality of different types of movements of the machine to generate an electronic fingerprint that is representative of a condition of the machine,

wherein the fingerprint device selects the at least one type of movement of the machine for measurement based on its determination of which plurality of movements, when measured, will reveal the electronic fingerprint that is representative of the condition of the machine.

2. (original)   The apparatus of claim 1, wherein the automation component is selected from the group consisting of a numeric control, a motion controller, a programmable logic controller or an intelligent drive.

3. (original)   The apparatus of claim 1, wherein the automation component and a corresponding engineering system provide a program platform for the implementation of electronic fingerprints by an application engineer.

4. (original)   The apparatus of claim 1, further comprising an engineering system corresponding to the automation component, wherein implementation of the fingerprints is done by at least one of a configuration process in the engineering system and a programming process using a specific API for the implementation of fingerprints.

5. (original)   The apparatus of claim 1, wherein the start of capturing the fingerprints is done by an action selected from the group consisting of: starting by local user via local HMI; starting by remote user via Ethernet/Internet; and starting based on an event evaluated in an application program running in the automation component.

6. (original)   The apparatus of claim 1, wherein the apparatus is used for a machine selected from the group consisting of: machine tools, packaging machines, a rubber-working machines; plastic-working machines; printing presses; woodworking machines; glassmaking machines; ceramic-working machines; stoneworking machines; textile machines; robotic manufacturing machines and materials handling machines.

7. (original)   The apparatus of claim 1, wherein the fingerprint device and the automation component generate an electronic fingerprint that is generic to a type of machine tool that indicates a stable behavior of the machine tool.

8. (original)   The apparatus of claim 2, wherein the fingerprint device and the automation component generate an electronic fingerprint having a deviation from the stable behavior, thereby indicating an unstable behavior of the machine.

9. (original)   The apparatus of claim 1, wherein the fingerprint device and the automation component generates a specific fingerprint for a particular production machine that is representative of a state of at least one the outputs of the particular production machine and the stable behavior of the machine.

10. (original)   The apparatus of claim 1, further comprising a graphical user interface for displaying a graphical depiction of the electronic fingerprint.

11. (original)   The apparatus of claim 1, wherein the fingerprint device is adapted for generating a periodic electronic fingerprint that is developed from a snap shot of the state of the machine at a certain time.

12. (original)   The apparatus of claim 6, further comprising an application for comparing the electronic fingerprints over time.

13. (original)   The apparatus of claim 6, further comprising a memory for storing the electronic fingerprints as a database.

14. (original)   The apparatus of claim 1, further comprising a maintenance scheduler for scheduling maintenance of the machine based on a prediction of a failure of the machine based on the electronic fingerprint.

15. (original)   The apparatus of claim 1, further comprising a remote communication capability that couples the machine to a remote processor.

16. (original)   The apparatus of claim 10, wherein the electronic fingerprint is downloaded over the remote communication to the remote processor.

17. (previously presented)   In an automation component comprising a controller for controlling movements of at least one component of a machine, a method for generating electronic fingerprints of the machine, the method comprising the steps of:

selecting, with the automation component, a set of parameters for measurement from a plurality of parameters that will uniquely identify a condition of the machine, the set of parameters associated with the at least one component of the machine and the plurality of parameters corresponding to different types of movement of the at least one component of the machine;

reading the selected set of parameters; and

storing the read parameters in storage coupled to the automation component, thereby creating an electronic fingerprint representative of the condition of the machine.

18. (original)   The method of claim 17, wherein the step of selecting selects parameters that at a time when the machine is in a stable state to generate thereby a generic type of electronic fingerprint that indicates a stable behavior.

19. (original)   The method of claim 18, wherein the step of selecting selects parameters having a deviation from the stable behavior, thereby generating an electronic fingerprint indicating an unstable behavior of the machine.

20. (original)   The method of claim 17, wherein the step of selecting selects parameters from a particular production machine that is representative of a state of an output of the particular production machine,

21. (original)   The method of claim 17, further comprising the step of generating a graphical depiction of the electronic fingerprint.

22. (original)   The method of claim 17, further comprising the step of comparing the electronic fingerprints over time,

23. (original)   The method of claim 17, further comprising the step of scheduling maintenance based on the electronic fingerprint.

24. (original)   The method of claim 17, further comprising the step of remotely coupling the machine to a remote processor.

25. (previously presented)   A computer readable program product having encoded therein instructions for driving a computer processor of an automation component comprising a controller for controlling movements of at least one component of a machine according to the steps of:

selecting, with the automation component, a set of parameters for measurement from a plurality of parameters that will uniquely identify a condition of the machine, the set of parameters associated with the at least one component of the machine and the plurality of parameters corresponding to different types of movement of the at least one component of the machine;

reading the selected set of parameters; and

storing the read parameters in storage coupled to the automation component, thereby creating an electronic fingerprint representative of the condition of the machine.

APPENDIX B
EVIDENCE APPENDIX

None

APPENDIX C
RELATED PROCEEDINGS APPENDIX

None